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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,426	01/16/2002	Alexander Gurary	EMCORE 3.0-069	2965
530	7590	12/16/2003		
LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090			EXAMINER MOORE, KARLA A	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,426

Applicant(s)

GURARY ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-32 is/are pending in the application.
- 4a) Of the above claim(s) 25-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 1-5, 7-10 and 12-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0076490 to Chiang et al. in view of U.S. Patent No. 6,442,950 to Tung and U.S. Patent No. 3,564,454 to Schrader.
3. Chiang et al. disclose a reactor for deposition substantially as claimed and comprising: a reaction chamber (Figure 13, 156) including a passthrough opening (either side of chamber) capable of inserting and removing wafer carriers from said reaction chamber; a cylindrical shutter (14) located inside said reaction chamber for selectively closing said passthrough opening and a second position for opening said passthrough opening (paragraph 78), wherein said cylindrical shutter includes an internal cavity (Figure 25, 304; paragraph 148) adapted to receiving a cooling fluid.
4. However, Chiang et al. fails to teach said internal cavity of said cylindrical shutter completely surrounding said at least one of said wafer carriers secured within said reaction chamber.
5. Tung teaches an internal cavity of a liner surrounding a wafer for the purpose of providing uniform temperature adjusting ability (column 4, rows 29-30).
6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an internal cavity surrounding a wafer in order to provide uniform temperature adjusting ability as taught by Tung.
7. Chiang et al. and Tung disclose the invention substantially as claimed and as described above.

8. However, Chiang et al. and Tung fail to teach the use of at least one of said wafer carriers being secured within said reaction chamber, wherein said cylindrical shutter completely surrounds said at least one of said wafer carriers secured within said reaction chamber and further comprising a rotatable spindle having an upper end located inside said reaction chamber, wherein at least one of said wafer carriers is secured to the upper end of the spindle.

9. Schrader teaches the use of a wafer carrier (Figures 1 and 2, 13; column 2, row 64 through column 3, row 30) for the purpose supporting substrates during a coating process. The wafer carrier is secured to a spindle (96) for the purpose of rotating the wafers/carrier during the coating process to aid in uniform coating thickness and quality.

10. With respect to the orientation of the of the wafer carrier on the spindle (claim 13), Examiner recognizes that in Schrader the vertical orientation is reversed. However, it is well known in the art that wafers can be successfully processed right side up or upside down and to reverse this orientation would have been obvious to one of ordinary skill in the art.

11. Further the courts have ruled that mere rearrangement of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F. 2d 669, 124 USPQ 378 (CCPA 1960).

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a wafer carrier in Chiang et al. and Tung in order to support wafers during a coating process and to have provided a spindle in Chiang et al. and Tung for rotatively supporting the wafer carrier in order to aid in uniform coating and thickness and quality as taught by Schrader.

13. With respect to claims 2 and 12, said reactor further comprises tubing (Figure 25, 306) connected with said internal cavity of said shutter for supplying said cooling fluid to said internal cavity.

14. With respect to claim 3, said tubing includes at least one inlet tube for introducing said cooling fluid into said internal cavity and at least one outlet tube from removing said cooling fluid from said internal cavity (paragraph 148).

Art Unit: 1763

15. With respect to claim 4, said tubing may include more than one inlet tube and more than one outlet tube. Chiang uses the language "at least one" to demonstrate that there may be "more than one"/"two or more" of each tube.
16. With respect to claim 5, said tubing is connected with said shutter for moving simultaneously with said shutter when said shutter moves between said first and second shutter positions (paragraph 97).
17. With respect to claims 7 and 15, said reactor further comprises an injection flange (Figure 13, 172; paragraph 106) for introducing reactants inside said reaction chamber.
18. With respect to claim 8, Chiang et al. further disclose the invention substantially as claimed and as described above, including one or more heating elements (Figure 13, 72; paragraph 89) provided in communication with said reaction chamber.
19. With respect to claim 9, Chiang et al. further disclose a heat shield (Figure 6, 48; paragraph 88) for improved thermal communication.
20. With respect to claim 10, said cylindrical shutter is "substantially" hollow to the extent that an internal cavity is provided with a volume which is capable of achieving a specific temperature of the shutter by providing a cooling fluid in the internal cavity.
21. Additionally with respect to claim 15, said reactor comprises a base plate (Figure 13, 112; paragraph 96).
22. With respect to Figure 16, said tubing has an opening for said tubing and said tubing extends through said opening (see Figure 13).
23. With respect to claim 17, said tubing has an upper end connected with said shutter (see Figures 13 and 25).
24. With respect to Figure 18, said tubing has a lower end located outside said reaction chamber and in fluid communication with a reservoir of said cooling fluid (see Figures 13 and 25). Although not shown, a reservoir must be present for supplying said cooling fluid (see paragraphs 128 and 136 which provides general details pertaining to fluid supply to the reactor).

Art Unit: 1763

25. With respect to claim 19, the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).
26. With respect to claim 20, the lower of end of said tubing is connected to a moveable plate (Figure 11, 126).
27. With respect to claim 21, said moveable plate is connected to an actuator (122; paragraph 97) adapted for moving said shutter between the first position for opening said passthrough opening and the second position for closing said passthrough opening.
28. With respect to claim 22, said tubing moves simultaneously with said shutter between said first and second position.
29. With respect to claim 23, said reactor further comprises a guide (124) in communication with said moveable plate for guiding movement of said moveable plate between the first and second shutter positions.
30. With respect to claim 24, said reaction chamber is substantially cylindrical (see Figures 11 and 12).
31. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al., Tung and Schrader as applied to claims 1-5, 7-10 and 12-24 above, and further in view of Japanese Patent No. 07-070730 to Kawada et al.
32. Chiang et al., Tung and Schrader disclose the invention substantially as claimed and as described above.
33. However, Chiang et al., Tung and Schrader fail to teach the reactor comprising stainless steel.
34. Kawada et al. teach the use of a reactor comprising stainless steel for the purpose of using a material excellent in pitting and corrosion resistance and moisture release resistance (abstract).
35. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a reactor comprising stainless steel in Chiang et al., Tung and Schrader in

Art Unit: 1763

order to take advantage of the materials pitting/corrosion resistance and moisture release resistance as taught by Kawada et al.

Response to Arguments

36. Applicant's arguments with respect to claims 1-10 and 12-24 have been considered but are moot in view of the new ground(s) of rejection. New art has been cited to address the newly added limitation of "the internal cavity of said cylindrical shutter completely surrounding said at least one of said wafer carriers secured within said reaction chamber".

Conclusion

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9310.

Application/Control Number: 10/046,426

Page 7

Art Unit: 1763

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km
9 December 2003

*Primary Examiner
AU 1763
P. Hassenzahl*